

PATENT

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secondary particles to be emitted from any selected one of a plurality of sites on said substrate, wherein the directing a particle beam includes deflecting said particle beam from one selected site to another;

guiding at least some of the secondary particles from said one selected site to a signal detector spaced from said one selected site;

generating signals in response to the detection of the detected secondary particles, said generated signals having values which vary in response to changes in the space between said detector and different ones of said selected sites; and

comparing the respective signals produced in response to the detection of said detected secondary particles from each of said selected sites with a selected predetermined reference signal.

16. (Canceled) The method according to claim 15 including deflecting said particle beam from one selected site to another.

17. The method according to claim 15 including relatively moving said substrate and said particle beam from one selected site to another.

18. The method according to claim 17 including moving said substrate relative to said particle beam.

19. The method according to claim 15 including relatively moving said substrate and said detector to vary the space between said selected site and said detector.

20. The method according to claim 15 including deflecting said particle beam relative to said substrate to change from one selected site to another and thereby vary the space between said detector and said another selected site.

21. The method according to claim 15 including guiding said at least some of said emitted secondary particles directly from said one selected site to said detector.

22. The method according to claim 21 including controlling the guiding of secondary particles to said detector as a function of the space between said detector and the site of the emitted secondary particles.

23. The method according to claim 21 including controlling the guiding of the secondary particles to said detector as a function independent of the space between said detector and the site of the emitted secondary particles.

24. The method according to claim 17 including moving said substrate simultaneously and in synchronization with the deflection of said particle beam.

25. The method according to claim 15 including determining the selected predetermined reference signal by calibration of said detector.

26. (Amended) Apparatus for testing a substrate comprising:

means for producing a particle beam;

B2 means for directing said beam along a first path to a selected one of a plurality of sites on said substrate whereby secondary particles are produced and emitted along a second path by said substrate at said selected one of said sites;

means for deflecting said particle beam from said one of said selected sites to another of said selected sites;

secondary particle detecting means spaced from said selected one of said sites;

means for guiding secondary particles from said selected one of said sites to said detector means, said detector means being operable to generate a signal having a value which varies in response to differences in the space between said detector and said selected one of said sites; and

means for comparing the respective signals produced in response to the detection of said detected secondary particles from each of said selected sites with a selected predetermined reference signal.

27. The apparatus according to claim 26 wherein said guiding means comprises

deflecting electrodes.

28. (Canceled) The apparatus according to claim 26 including means for deflecting said particle beam from said one of said selected sites to another of said selected sites.

29. The apparatus according to claim 26 wherein said substrate is supported on a movable support, and including means for conjointly moving said support and the substrate supported thereby.

30. The apparatus according to claim 29 including means for deflecting said particle beam simultaneously with the conjoint movement of said support and said substrate.

Please add the following new claims:

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31. (New) A method of testing a substrate, in which a particle beam is directed onto the substrate and emitted secondary particles are detected with a detector and then evaluated, characterized in that the location ^{initial} (x_1, x_2) of the secondary particles emitted on the substrate relative to the position of the detector is taken into account during testing, whereby means are provided for guiding the secondary particles from the substrate to the detector, these means being formed of a plurality of plate-shaped deflection electrodes, and being controlled as a function of the location (x_1, x_2) of the emitted secondary particles relative to the position of the detector, and whereby the means for guiding the secondary particle are located below the detector.

32. (New) The method according to claim 31, characterized in that the means which guide the secondary particles are controlled in such a way that a detector signal which is independent of the location (x_1, x_2) is set at the detector.

33. (New) The method according to claim 31, characterized that the particle beam is deflected for scanning of the substrate.

34. (New) The method according to claim 31, characterized in that the detector produces a detector signal which is based on the secondary particles emitted at a specific location (x_1, x_2) on the substrate and the detector signal is compared with a desired signal, the location (x_1, x_2) of the emitted secondary particles relative to the position of the detector being taken into consideration during the comparison.

35. (New) The method according to claim 31, characterized in that the particle beam is deflected in order to scan the substrate and the substrate furthermore is retained on a movable table, the deflection taking place simultaneously and synchronized with the displacement of the table.

36. (New) The method according to claim 31, characterized in that a calibration is carried out in which the values for the control of the means for guiding the secondary particles are determined and stored.

37. (New) The method according to claim 31, characterized in that the values for the control of the means for guiding the secondary particles are calculated immediately before the detection by means of a location-dependent function.

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38. (New) A method of testing a substrate, in which a particle beam is directed onto the substrate and emitted secondary particles are detected with a detector and then evaluated, characterized in that the location (x_1, x_2) of the secondary particles emitted on the substrate relative to the position of the detector is taken into account during testing, whereby the location (x_1, x_2) of the secondary particles emitted on the substrate relative to the position of the detector is taken into consideration during the evaluation. ?

39. (New) The method according to claim 38, characterized in that the detector produces a detector signal which is compared with a desired signal during the evaluation.

40. (New) The method according to claim 38, characterized in that the particle beam is deflected in order to scan the substrate and the substrate furthermore is retained on a movable table, the deflection taking place simultaneously and synchronized with the displacement of the table.

41. (New) An apparatus for testing a substrate, comprising:

means for producing a particle beam;

a detector for detecting secondary particles emitted on the substrate by the particle beam and for producing a detector signal;

means for guiding the secondary particles to the detector; and

an arrangement for evaluation of the detector signal;

characterized in that the means for guiding secondary particles emitted on the substrate to the detector are formed of a plurality of plate-shaped electrodes;

a control arrangement is provided which controls the means for guiding the secondary particles as a function of the location of the emitted secondary particles in such a way that a detector signal is produced which is independent of the location; and

the means for guiding secondary particles emitted on the substrate to the detector are located below the detector.

42. (New) The apparatus according to claim 41, characterized in that the means for guiding the secondary particles are formed by deflecting electrode.

43. (New) The apparatus according to claim 41, characterized in that a movable table is provided for retaining the substrate.

44. (New) An apparatus for testing a substrate, comprising:

means for producing a particle beam;

means for deflecting the particle beam on a specific location of the substrate;

a detector for detecting secondary particles emitted on the substrate by the particle beam; and

an arrangement for evaluation of the detector signal;